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5.18 REBOUND HAMMER (SCHMIDT HAMMER)

5.18.1 Introduction

A rebound hammer, commonly referred to as a Schmidt Hammer, is a mechanical device used to directly measure the hardness of in-place concrete and the calibrated compressive strength. The device consists of a plunger and a spring-loaded hammer. When triggered, the hammer strikes the free end of the plunger that is in contact with the concrete, which in turn causes the plunger to rebound. The extent of the rebound is measured on a linear scale attached to the device. Refer to Figure 5.18.1-1 for a view of a standard rebound hammer.

This test is covered in American Society for Testing and Materials (ASTM) C805-97, "Standard Test Method for Rebound Number of Hardened Concrete."



Figure 5.18.1-1: Standard Rebound Hammer.

5.18.2 Applications

The rebound hammer is used to assess the uniformity of in-situ concrete and to delineate zones of poor quality or deteriorated concrete. It is also useful to detect changes in concrete characteristics over time, such as hydration of cement, for the purpose of removing forms or shoring.

Advantages of the rebound hammer are that it is portable, easy to use, low cost, and can quickly be used to cover large areas and highly repeatable.

5.18.3 Limitations

The rebound hammer is valuable purely as a qualitative tool since it only measures the relative surface hardness of the concrete. Other tests, such as a compression test, must be used to determine the actual strength of the concrete. The rebound measurement is governed by several factors including the size, age, and finish of the concrete, as well as the aggregate type and the moisture content. Also, the Rebound Hammer Test should not be done over exposed aggregate or a false reading will be given.